

CLAIMS

1. An ink-jet ink, comprising

a) a liquid vehicle; and

5 b) a polymer-dispersed pigment dispersed in the liquid vehicle, said polymer-dispersed pigment including a pigment encapsulated with a polymer, said polymer being a polymerization product of at least a first monomer having a hydrophilic group, and a second monomer having a hydrophobic group, wherein the polymer-dispersed pigment is stable in the liquid vehicle at a pH from about

10 5.5 to about 8.5.

2. An ink-jet ink as in claim 1, wherein the hydrophilic group is selected from the group consisting of sulfonic acid, fluoric acids, α - and/or β -fluorocarboxylic acids, and combinations thereof.

15 3. An ink-jet ink as in claim 2, wherein the hydrophilic group is a sulfonic acid.

4. An ink-jet ink as in claim 1, wherein the first monomer is selected from
20 the group consisting of vinyl sulfonic acid, 4-styrenesulfonic acid, trifluoroacrylic acid, tetrafluorostyrene-4-carboxylic acid, α -trifluoromethyl acrylic acid, difluoromaleic anhydride, and combinations thereof.

25 5. An ink-jet ink as in claim 4, wherein the first monomer is vinyl sulfonic acid.

6. An ink-jet ink as in claim 1, wherein the first monomer is used to form from about 10 wt% to about 50 wt% of the polymer.

30 7. An ink-jet ink as in claim 1, wherein the hydrophobic group is selected from the group consisting of aromatic, aliphatic, alicyclic, heterocyclic, and combinations thereof.

8. An ink-jet ink as in claim 1, wherein the hydrophobic group is phenyl.

9. An ink-jet ink as in claim 1, wherein the second monomer is selected
5 from the group consisting of styrene, cinnamic acid, 4-alkylstyrene, and
combinations thereof.

10. An ink-jet ink as in claim 1, wherein the second monomer is used to
form from about 25 wt% to about 80 wt% of the polymer.

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11. An ink-jet ink as in claim 1, wherein the polymer is further a
polymerization product of a third monomer.

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12. An ink-jet ink as in claim 1, wherein the polymer is a styrene-
vinylsulfonic acid copolymer.

13. An ink-jet ink as in claim 1, wherein the polymer is a styrene-butyl
acrylate-methacrylic acid-vinylsulfonic acid copolymer.

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14. An ink-jet ink as in claim 1, wherein the polymer is a styrene-
trifluoroacrylic acid-vinylsulfonic acid copolymer.

15. An ink-jet ink as in claim 1, wherein the polymer is a styrene- α -
(trifluoromethyl)acrylic acid-vinylsulfonic acid copolymer.

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16. An ink-jet ink as in claim 1, wherein the polymer is a styrene-trifluoro
acrylic acid copolymer.

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17. An ink-jet ink as in claim 1, wherein the polymer-dispersed pigment
is stable in the liquid vehicle at a pH from about 6.5 to about 7.5.

18. A system for printing an image, comprising:

- a) a substrate; and
- b) a first ink-jet pen containing a first ink-jet ink, said first ink-jet ink pen configured for printing the first ink-jet ink on the substrate, said first ink-jet ink including a first polymer-dispersed pigment dispersed in a first liquid vehicle,
5 said polymer-dispersed pigment having a first pigment encapsulated with a first polymer, said polymer being a polymerization product of at least a first monomer having a hydrophilic group and a second monomer having a hydrophobic group.

10 19. A system as in claim 18, wherein the hydrophilic group is selected from the group consisting of sulfonic acid, fluoric acids, α - and/or β -fluorocarboxylic acids, and combinations thereof.

15 20. A system as in claim 19, wherein the hydrophilic group is a sulfonic acid.

21. A system as in claim 18, wherein the first monomer is selected from the group consisting of vinyl sulfonic acid, 4-styrenesulfonic acid, trifluoroacrylic acid, tetrafluorostyrene-4-carboxylic acid, α -trifluoromethyl acrylic acid, difluoromaleic anhydride, and combinations thereof.

20 22. A system as in claim 18, wherein the first monomer is used to form from about 10 wt% to about 50 wt% of the polymer.

25 23. A system as in claim 18, wherein the second monomer is selected from the group consisting of styrene, cinnamic acid, 4-alkylstyrene, and combinations thereof.

24. A system as in claim 18, wherein the second monomer is used to form from about 25 wt% to about 80 wt% of the polymer.

30 25. A system as in claim 18, wherein the polymer is further a polymerization product of a third monomer.

26. A system as in claim 18, wherein the polymer is selected from the group consisting of styrene-vinylsulfonic acid copolymer, styrene-butyl acrylate-methacrylic acid-vinylsulfonic acid copolymer, styrene-trifluoroacrylic acid-vinylsulfonic acid copolymer, styrene- α -(trifluoromethyl)acrylic acid-vinylsulfonic acid copolymer, and styrene-trifluoro acrylic acid copolymer.
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27. A system as in claim 18, further comprising a second ink-jet pen containing a second ink-jet fluid, said second ink-jet fluid including a cationic component configured for reduced bleed when printed adjacent to the first ink-jet ink.
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28. The system as in claim 27, wherein said second ink-jet fluid includes a pigment.
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29. The system as in claim 18, wherein the first polymer-dispersed pigment is stable in the first liquid vehicle at a pH from about 6.5 to about 7.5.
30. A method of printing an image, comprising ink-jetting an ink-jet ink onto a media substrate, said ink-jet ink including:
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- a) a liquid vehicle; and
 - b) a polymer-dispersed pigment dispersed in the liquid vehicle, said polymer-dispersed pigment including a pigment encapsulated with a polymer, said polymer being a polymerization product of at least a first monomer having a hydrophilic group, and a second monomer having a hydrophobic group, wherein the polymer-dispersed pigment is stable in the liquid vehicle at a pH of from about 5.5 to about 8.5.
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31. A method as in claim 30, wherein the first monomer is selected from the group consisting of vinyl sulfonic acid, 4-styrenesulfonic acid, trifluoroacrylic acid, tetrafluorostyrene-4-carboxylic acid, α -trifluoromethyl acrylic acid, difluoromaleic anhydride, and combinations thereof.
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32. A method as in claim 30, wherein the first monomer is used to form from about 10 wt% to about 50 wt% of the polymer.

5 33. A system as in claim 30, wherein the polymer is selected from the group consisting of styrene-vinylsulfonic acid copolymer, styrene-butyl acrylate-methacrylic acid-vinylsulfonic acid copolymer, styrene-trifluoroacrylic acid-vinylsulfonic acid copolymer, styrene- α -(trifluoromethyl)acrylic acid-vinylsulfonic acid copolymer, and styrene-trifluoro acrylic acid copolymer.

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34. The method as in claim 30, further comprising ink-jetting a second ink-jet fluid, said second ink-jet fluid including a cationic component configured for reduced bleed when printed adjacent to the first ink-jet ink.

15 35. The method as in claim 34, wherein the second ink-jet fluid includes a cationically-dispersed pigment.

36. The method as in claim 30, wherein the polymer-dispersed pigment is stable in the liquid vehicle at a pH from about 6.5 to about 7.5.